

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

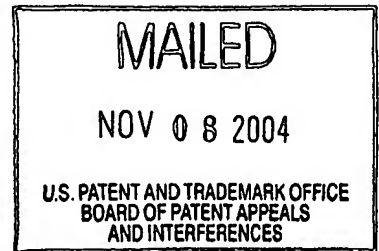
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HEROLD L. BALDONADO,
CELINE R. MANDAPAT
and PAUL G. PEREZ

Appeal No. 2004-2226
Application No. 10/066,421

ON BRIEF



Before STAAB, MCQUADE, and NASE, Administrative Patent Judges.
MCQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Herald M. Baldonado et al. originally took this appeal from the final rejection (mailed February 26, 2003) of claims 1, 2 and 4 through 22. After the appellants canceled claim 22 and submitted a main brief (filed September 2, 2003), the examiner issued an Office action (mailed November 18, 2003) reopening prosecution and entering superseding rejections of claims 1, 2 and 4 through 21. Pursuant to 37 CFR § 1.193(b)(2)(ii), the appellants then submitted a supplemental brief (filed February 19, 2004), implicitly requesting that the appeal be reinstated.

Tacitly granting the request, the examiner entered an answer (mailed June 8, 2004), noted a reply brief (filed July 27, 2004) submitted by the appellants and forwarded the application to this Board for review of the new rejections of claims 1, 2 and 4 through 21, all of the claims currently pending in the application.

THE INVENTION

The invention relates to "the fabrication and packaging of semiconductor devices, specifically a method and system of bonding wires from a semiconductor die to a lead using interposer pads" (specification, page 1). Representative claim 1 reads as follows:

1. A method and system of wire bonding a semiconductor die to a lead, comprising steps of:
attaching a first end of a first bonding wire to a semiconductor die with a ball bond;
attaching a second end of the first bonding wire to an interposer pad with a stitch bond;
attaching a first end of a second bonding wire to the interposer pad with a ball bond; and
attaching the second end of the second bonding wire to the lead with a stitch bond.

THE REJECTIONS

Claim 7 stands rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter the appellants regard as the invention.

Claims 1, 2 and 4 through 21 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the appellants, at the time the application was filed, had possession of the claimed invention.

Claims 1, 2 and 4 through 21 stand rejected under 35 U.S.C. § 102(a) as being anticipated by U.S. Patent No. 6,232,561 to Schmidt et al. (Schmidt).

Attention is directed to the main, supplemental and reply briefs and to the answer for the respective positions of the appellants and the examiner regarding the merits of these rejections.¹

DISCUSSION

I. Petitionable matter

In the supplemental brief, the appellants appear to raise as an issue in the appeal the propriety of the objection to the

¹ The reasons for the 35 U.S.C. § 112, first paragraph, rejection appear in the answer under two separate statements of rejection. For purposes of this appeal, we shall treat these separate statements as one rejection since the statutory basis for each is the same. Also, the examiner's comment on page 5 in the answer that "[c]laim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form" is inconsistent with the standing rejections of this claim and is therefore presumed to be erroneous.

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drawings made in the superseding Office action. As this objection is not directly connected with the merits of any rejection of claims, it is reviewable by petition to the Director rather than by appeal to this Board (see In re Hengehold, 440 F.2d 1395, 1403-1404, 169 USPQ 473, 479 (CCPA 1971)), and hence will not be further addressed in this decision.

II. The 35 U.S.C. § 112, second paragraph, rejection of claim 7

We shall summarily sustain the standing 35 U.S.C. § 112, second paragraph, rejection of claim 7 since the appellants have not challenged such on the merits (see page 2 in the supplemental brief and page 1 in the reply brief).²

III. The 35 U.S.C. § 112, first paragraph, rejection of claims 1, 2 and 4 through 21

As pointed out above, this rejection rests on the examiner's position that claims 1, 2 and 4 through 21 contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the appellants, at the time the application was filed, had possession of the claimed invention. This reasoning identifies the relevant statutory provision as the written description requirement of

² It is unclear why the examiner did not include claim 14 along with claim 7 in this rejection since both contain the language viewed as problematic by the examiner.

§ 112, ¶ 1. The test for compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to the artisan that the inventors had possession at that time of the later claimed subject matter, rather than the presence or absence of literal support in the specification for the claim language. In re Kaslow, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983). The content of the drawings may also be considered in determining compliance with the written description requirement. Id.

The first area of concern to the examiner involves the various limitations in the claims requiring attachment of the ends of the first and second bonding wires by either a stitch bond or a ball bond. By way of example, claim 1 requires the first end of the first wire to be attached to the semiconductor die with a ball bond, the second end of the first wire to be attached to the interposer pad with a stitch bond, the first end of the second wire to be attached to the interposer pad with a ball bond and the second end of the second wire to be attached to the lead with a stitch bond. Page 4 in the original specification describes a first end of a first wire 20 as being attached to the semiconductor die with a ball bond 12, a first

end of a second wire 24 as being attached to the interposer pad with a ball bond 23 and a second end of the second wire as being attached to the lead with a stitch bond 25. Although lacking an express description of the bond by which the second end of the first wire 20 is attached to the interposer pad, the original disclosure as a whole, and particularly the descriptions of wire 13 in Figure 1 and wire 20 in Figure 2 as having one end attached with a ball bond and the other end attached with a stitch bond, would reasonably convey to the artisan that the second end of the first wire 20 is attached to the interposer pad with a stitch bond. Thus, the disclosure of the application as originally filed would reasonably convey to the artisan that the appellants had possession at that time of subject matter meeting the various limitations in the claims relating to the attachment of the ends of the first and second bonding wires by either a stitch bond or a ball bond.

The examiner also voices concern about the limitations in the claims pertaining to the interposer electro-less substrate, the ball grid array, and the electrically floating nature of the interposer pad(s) (see page 4 in the answer). The first two features find express support in the original disclosure (see pages 2 and 5 in the specification) and the third finds implicit

support in the illustration in the drawings of interposer pads 21 as not being connected to a voltage source.³

Finally, the examiner refers to subject matter which previously had been recited in claims 3, 16 and 22, but is not currently recited in the claims. Such unclaimed subject matter does not provide any basis to reject the current claims under the written description requirement.

In light of the foregoing, we shall not sustain the standing 35 U.S.C. § 112, first paragraph, rejection of claims 1, 2 and 4 through 21.

IV. The 35 U.S.C. § 102(a) rejection of claims 1, 2 and 4 through 21 as being anticipated by Schmidt

Schmidt discloses an assembly carrier 1 comprising a plurality of connections 5 on an electronic component 2 (e.g., an integrated circuit), a plurality of conductor paths 3 spaced from the connections 5, a plurality of connection surfaces 4 disposed between the connections 5 and the conductor paths 3, wires 6 bridging respective connections 5 and connection surfaces 4, and wires 7 bridging respective connection surfaces 4 and conductor paths 3. Each wire 6 is attached to its connection 5 with a ball

³ The examiner has not challenged the appellants' assertion in the supplemental brief that the term "electrically floats" means that "the interposer pad is not connected to a voltage source" (page 3).

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bond 6a and to its connection surface 4 with a wedge (i.e., stitch) bond 6b, and each wire 7 is attached to its connection surface 4 with a wedge bond 7b and to its conductor path 3 with a ball bond 7a.

Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984).

In the present case, Schmidt does not meet the limitation in independent claim 1, or the corresponding limitations in independent claims 8 and 16, requiring a bonding wire to be attached to a lead with a stitch bond. Schmidt's bonding wires 7 are attached to their associated leads (conductor paths 3) by ball bonds 7a.

Thus, Schmidt does not disclose each and every element of the invention recited in independent claims 1, 8 and 16. Therefore, we shall not sustain the standing 35 U.S.C. § 102(a) rejection of claims 1, 8 and 16, and dependent claims 2, 4 through 7, 9 through 15 and 17 through 21, as being anticipated by Schmidt.

V. New ground of rejection

The following rejection is entered pursuant to 37 CFR § 41.50(b).

Claims 4, 10 and 19 are rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter the appellants regard as the invention.

The second paragraph of § 112 requires claims to set out and circumscribe a particular area with a reasonable degree of precision and particularity. In re Johnson, 558 F.2d 1008, 1015, 194 USPQ 187, 193 (CCPA 1977). In determining whether this standard is met, the definiteness of the language employed in the claims must be analyzed, not in a vacuum, but always in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing the ordinary level of skill in the pertinent art. Id.

Claims 4, 10 and 19 recite a substrate which is "electro-less." The underlying specification provides no guidance as to what this means. The appellants acknowledge that the ordinary and accustomed definition of "electro-less" is "[t]he deposition of a metallic coating, usually nickel, on a component by chemical means rather than by electroplating" (see the supplemental brief

and the exhibit appended thereto), but insist that as used in the instant specification and claims 4, 10 and 19, "electro-less" should be construed literally as meaning "insulating" (see page 4 in the main brief). The appellants, however, have not advanced any authority supporting this latter meaning. Given the lack of any guidance in the specification as to the meaning of the term "electro-less," the apparent lack of any authority for the argued meaning and the conflicting conventional definition, the use of this term in claims 4, 10 and 19 renders these claims indefinite.

SUMMARY

The decision of the examiner:

- a) to reject claim 7 under 35 U.S.C. § 112, second paragraph, is affirmed;
- b) to reject claims 1, 2 and 4 through 21 under 35 U.S.C. § 112, first paragraph, is reversed; and
- c) to reject claims 1, 2 and 4 through 21 under 35 U.S.C. § 102(a) as being anticipated by Schmidt is reversed.

In addition, a new rejection of claims 4, 10 and 19 is entered pursuant to 37 CFR § 41.50(b).

Regarding the affirmed rejection(s), 37 CFR § 41.52(a)(1) provides "[a]ppellant may file a single request for rehearing

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within two months from the date of the original decision of the Board."

In addition to affirming the examiner's rejection(s) of one or more claims, this decision contains a new ground of rejection pursuant to 37 CFR § 41.50(b). 37 CFR § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 CFR § 41.50(b) also provides that the appellants, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

Should the appellants elect to prosecute further before the examiner pursuant to 37 CFR § 41.50(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejection, the effective date of the

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affirmance is deferred until conclusion of the prosecution before the examiner unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.


If the appellants elect prosecution before the examiner and this does not result in allowance of the application, abandonment or a second appeal, this case should be returned to the Board of Patent Appeals and Interferences for final action on the affirmed rejection, including any timely request for rehearing thereof.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

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AFFIRMED-IN-PART; 37 CFR § 41.50 (b)



LAWRENCE J. STAAB
Administrative Patent Judge


JOHN P. MCQUADE
Administrative Patent Judge

BOARD OF PATENT

APPEALS AND

INTERFERENCES


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